Currently the TOSSIM simulator models noise using Concurrent Pattern Matching but assumes that reception power is constant.

This is in conflict with experimental evidence. Example RSSI variation plot:

We propose to model power by using experimentally collected traces and the CPM algorithm introduced by Lee, Cerpa, and Levis in 2007.
Determining Reception Power from Experiment is Complex

- Collecting power traces is more complex than collecting noise traces, since:
  - (1) power can only be approximated by sampling the RSSI register upon the reception of a packet;
  - (2) if a packet is lost, then even the RSSI estimate is not possible. Experiments collected were very sensitive and minor changes in mote position yielded very different PRRs.

- $|\text{Power}| = |\text{RSSI} - \text{Noise}|$. However, noise and power may be out of phase, so it is difficult to determine the numerical value for power.

- Filling in missing reception power values is a nontrivial problem.

- This work proposes an algorithm that provides preliminary answers to these questions.
Different algorithms are better modeled by different assumptions in the answers to these questions. For example:

Code for simulator to be available on tinyos-2.x-contrib/cornell/soon. Please see my poster for more details.